

Spencer Brown's Paradox

Mike Zundel, University of Liverpool Management School, Chatham Building, Chatham Street, Liverpool, L69 7ZH

Anders La Cour, Copenhagen Business School, Department of Management, Politics and Philosophy, Porcelænshaven 18A, 2000 Frederiksberg, DK

Ghita Dragsdahl Lauritzen, University of Copenhagen, Department of Food and Resource Economics, Rolighedsvej 25, 1958 Frederiksberg, DK

Abstract

George Spencer Brown is best known for his book *Laws of Form*, which elaborates a primary algebra of distinctions and forms capable of dealing with self-referential equations reflective of paradoxes in logic. The book has received little attention in mathematics, but it has greatly influenced cybernetics, communications, and ecological theories. But Spencer Brown also published poetry and stories, often under different names, and he practiced as a psychotherapist. Our chapter elaborates the utility of *Laws of Form* relating to organizational paradox before considering Spencer Brown's other works in relation to his mathematics. Invoking philosophy, psychoanalysis and art, we suggest that these indicate a further distinction that sets all forms against the 'nothing': a wholeness or unity from out of which all distinctions, all words, meaning and life – but also all silence, nonsense and death – emerge in paradoxical opposition. Reading Spencer Brown not through the prism of mathematics, but as an evocative invitation to engage with the fissures that animate art and human life, highlights the paradoxical interplay of organization and violence; and how tragedy, suffering, sympathy and love should be more prominent in organizational research.

Keywords

Distinction, form, Nietzsche, Jung, Nishida, nothing, violence, accident, birth, death.

In the book *Only Two Can Play This Game*, the poet James Keys (1971, p. 50) writes under the title ‘An Accident’:

My love, would you not come to me if
I was wounded?
Would you not arrive to comfort me if
I had had a serious accident?
Well, I have had a serious accident.
I have been born.

Birth is a serious accident. Life is a wound. The in-dividual cut away from the world at birth, made boundedly singular, yet retaining a constant yearning for completeness and unity is the paradox running through this collection of poems. Keys is one of the pen-names used by George Spencer Brown (1923-2016): hirsute mathematical genius and heir to Euclid,¹ engineer, record-holding pilot of glider airplanes, Royal Airforce reserve officer and code-breaker, consultant, football correspondent, chess master, composer and editor of a book on ‘tunes and musical themes,’² inventor, game creator, racing car driving poet and, reportedly, a strange neighbour.³ Working with philosophers Bertrand Russell and Ludwig Wittgenstein at Cambridge, Spencer Brown practiced psychotherapy after studying with psychologist R.D. Laing.⁴ His best-known work, *Laws of Form*, develops an elegant, non-numerical calculus capable of capturing paradoxical states of affairs as unfolding and refolding distinctions, but even this remains largely ignored by mathematicians (Schiltz, 2007).⁵ Perhaps this is no surprise, given its insights are conveyed in near mystic, circular expressions (‘we name the form of the distinction the form’); the invocation of a trinity (‘what something is, what it is not,

¹ “Not since Euclid’s *Elements* have we seen anything like it” is a quote by Bertrand Russell on the sleeve of Spencer Brown’s *Laws of Form*. But this might very well have been one of many pranks by the eccentric author (see Landini, 2018). Stafford Beer suggested Spencer Brown may have been Russell’s ‘natural’ (illegitimate) son (even Wittgenstein’s lover whilst at Cambridge) (see V. Beer, 2019), while Spencer Brown (2015, p. vii) himself suggests that Russell’s book recommendation was achieved only by Spencer Brown (‘not unwillingly’) sleeping with Russell’s granddaughter.

² In a piece of simplistic ingenuity, the book identifies a large number of tunes by simple UpDownUpDown and Repeat... patterns. ‘Hallelujah!’ from Handel’s Messiah, is thusly coded as: DUDUD UDURR RRRRR. (See Crompton, 2019).

³ For example, he did all his writing naked (Spencer Brown, 2004), and adopted an increasingly dishevelled look in his later years.

⁴ A reciprocal relationship, as Baecker (2015a) suggests Laing’s 1970 book ‘Knots’ about human relations getting entangled in knots appears owes much to Spencer-Brown.

⁵ For exceptions, see Kauffman 2016. Instead, reviews appeared in other places, for example by von Förster in the final *Whole Earth Catalog* and by Stafford Beer in *Nature*.

and what separates the two’); and its elaboration of a mathematical genesis of a universe (space and time) out of void. *Laws of Form* begins with a series of untranslated Chinese characters and epigraphs to two different prints of the book feature obscure, anti-establishment references to the mystic engraver William Blake.⁶ All this is accompanied by Spencer Brown’s reported rudeness and hostility towards mathematicians, and him claiming, as Keys (1972, p. 32ff), that ‘in the whole science of physics there is no such thing as a thing’; and that ‘modern science is maintained by means of a huge and very powerful magic spell’, putting us all to sleep. Instead, of mathematics, *Laws of Form* influenced second order cybernetics; theories of rhizomes, ‘living’ systems and ecology (Bateson, 1972; Shaw, 2015); the sociology of social and communications systems (Luhmann, 1995); computer languages (Bricken, 2017); and some approaches to organizational studies (Bakken, 2014; Baecker, 2015; Reichel, 2017).

Our chapter elaborates the utility of *Laws of Form* relating to organizational paradox (e.g., Schad et al., 2016; Smith & Lewis, 2011), as it provides mathematical and visual methods to work with substantially complex and layered recursive relationships (Baecker, 2006). Moreover, we explore *Laws of Form* in the context of Spencer Brown’s poems and stories, as well as his engagement with psychoanalysis. We suggest that these works are not merely unscholarly dalliances, but very serious attempts to indicate an even deeper-going divide that sets any distinction, inducing *Law of Form*, against the ‘nothing’: a wholeness or unity from out of which all distinctions, all words, meaning and life – but also all silence, nonsense and death - emerge in paradoxical opposition.

We commence with basic elements in *Laws of Form* and trace their relation to organizational paradox through the work of Baecker (2015), himself a student of Luhmann, elaborating questions of organizing, management and leadership. We then turn to the ‘nothing’ whose ungraspable qualities Spencer Brown invokes through stories and poems. Paving the way towards these writings, we develop a vocabulary and sensitivity for the nothing through exploration of three inter-related themes: Through Kyoto School philosopher Nishitani, we explore existential notions of the nothing. Via Jung we trace how mystical origins of the nothing give rise to psychological oppositions; and with Nietzsche show how art –music tragedy in particular – invokes the play of form and formlessness. This allows us to engage with Spencer Brown’s (and Keys’s) poetry and stories and elaborate implications for

⁶ One, ‘The form of the Angelic land’, a poem rife with symbolism obscuring a call for revolutionary uprising against kings and bishops. The other, ‘There is no Natural Religion’, which is worth spelling out because, as we will argue, it captures much of Spencer Brown’s views: (I) Man’s perceptions are not bounded by organs of perception. He perceives more than sense (tho’ ever so acute) can discover. (II) Reason or the ratio of all we have already known is not the same that it shall be when we know more.

organization studies, showing how such readings overflow the distinctions drawn in *Laws of Form*. Reading Spencer Brown not through the prism of mathematics, but as an evocative invitation to engage with the fissures that animate art and human life, highlights the paradoxical interplay of organization and violence; and how tragedy, suffering, sympathy and love should be more prominent in organizational research.

Laws of Form and organization: Re-entry I

Laws of Form responds to a long-standing mathematical paradox relating to infinite series of numbers. At the end of the nineteenth century, the founder of set theory, Georg Cantor, found that the infinite is itself differentiated, with different infinite series coming in different sizes. Moreover, if one counted all the infinite series, one would again find an infinite series, but one whose number, including itself when counted, must be larger than any countable (cardinal) number (Davis, 2000, p. 67). This problem led Russell to consider paradoxes in logic and the membership of sets: Extraordinary sets are self-including, such as ‘a set of all things not sparrows.’ This set itself also belongs to all things not being sparrows. Ordinary sets, on the other hand, have no such self-referentiality, for instance the set: ‘all things that are sparrow’ which, clearly, does not include the ‘set’ itself. But what about a set containing all ordinary sets? Would that not at once have to be larger than the number of all the sets it contains, as it, itself, is one such set (Davis, 2000, p. 67)? As Russell (1919, p. 136) states:

The comprehensive class we are considering, which is to embrace everything, must embrace itself as one of its members. In other words, if there is such a thing as “everything,” then, “everything” is something, and is a member of the class “everything.”

Whitehead and Russell’s (1910) *Principia Mathematica* proposes a stopgap intervention by excluding paradoxes from the domain of logic: sets cannot be members of themselves!⁷

Spencer Brown’s biography placed him directly into this debate, having worked with the two foremost logicians of the time, Russell and Wittgenstein. *His* solution to the problem was formed when he worked on practical electrical and engineering assignments.⁸

⁷ The continuation of the problem is most intriguing, as the proof of Cantor’s ideas leads via Kurt Gödel, who provided a theorem suggesting that any sufficiently complex mathematical system would contain undecidable propositions, including, with impish irony, the *Principia Mathematica* itself, to Alan Turing’s development of the universal computer as a brute force means of proof.

⁸ He recounts this at a conference held at the Esalen Institute in California, organized to explore *Laws of Form* in a week-long meeting with the ‘master’, also attended by von Förster and Bateson. After only two days, Spencer

Collaborating with his brother David on transistor elements and, in the early 1960s, commissioned by British Rail, Spencer Brown developed a machine capable of calculating the movement of railway carriages in and out of tunnels. This required counting the wheels going inside, but also backwards, as trains frequently stop and reverse, while not forgetting how many wagons had passed in to the tunnel.⁹ It occurred to Spencer Brown (1973) that logic based on such ‘and/or’, ‘if/so’, etc., rules was of little use for this task, as it was not a matter of defining and calculating truth values but of coping with states that change depending on circumstance and environment (Bakken, 2014). The calculation of railway carriages therefore entailed precisely the kind of vagueness that Russell sought to exclude from the domain of mathematics and logic.

Laws of Form states such set-theoretical self-referentiality in arithmetic terms, before transposing the idea of imaginary numbers into Boolean algebra. It develops a calculus for seemingly inconsistent values: here the statement is true (we count the railway carriage), here it is not (it is the same one that reversed earlier): “It’s either what it was before or it’s what it wasn’t before” (Spencer Brown, 1973). In solving the problem of counting railway carriages, almost as an afterthought, *Laws of Form* provides mathematicians and logicians with a method - a primary algebra - to work with self-referential ideas: ‘an engineering mathematics [enabling] engineers to construct machines that will do things’ (Heidingsfelder, 2013).

Laws of Form develops a series elegant operations which, unlike those of formal logic, do not begin with elements, but with an *act*. Prompted by Spencer Brown’s injunction to ‘draw a distinction’: “... a universe comes into being when a space is severed ...” (Spencer Brown, 1969, p. xxix). This cleaving of a first space is akin to drawing a circle or box on a piece of paper. The act ‘shapes distinguishable states’ that allow for any distinction of some-thing from something else – and all subsequent descriptions - to be made. Distinction creates autonomous systems and their universes, held together ‘in perfect continence’;¹⁰ and once “the distinction has been drawn, a ‘universe’ is there, and the gates to return to a state of nothingness are closed...” (Schiltz, 2007, p. 13).

Brown hurried back to England, having fallen out with the conference sponsors (Barney, 2019). Baecker (1999) tells us that in this period Spencer Brown also sought the psychotherapeutic services of Ronald D. Laing.

⁹ Rumour has it his brother never existed (Landini, 2018); that perhaps ‘David’ was merely a ‘tax avoidance construct’ (Beer, 2019). We looked for the patent Spencer Brown mentions in his talk, one for a firm called Mullard on lift design and one on board games – but both were filed under the single name George Spencer Brown. Yet, his autobiography contains pictures of both as children (Spencer-Brown, 2004. From around 1971 he uses a hyphen in his name, but he also went by the names of Richard Leroy, Richard Revere and James Keys).

¹⁰ It is this idea of cleaving and shaping of perfectly distinguished systems that underpins later notions of autopoiesis (<https://www.jamesrwilliams.net/metaphysics-deleuze-or-spencer-brown/>)

Spencer Brown draws a mark of distinction (the hook in Figure 1, suggesting a box or circle)¹¹ separating an ‘inside’ (called the ‘marked state’; what is known) from an outside (‘unmarked state’; the unknown, contextual remainder). The whole set is called ‘the Form’; a triad consisting of the inside, outside as well as the (mark of) distinction itself, marking the boundary:¹²

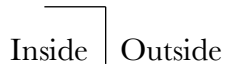


Figure 1

As the distinction is drawn (an ‘act’) , there “can be no distinction without motive, and there can be no motive unless contents are seen to differ in value” (Spencer Brown, 1969, p. 1), the ensuing triadic form (inside/outside/mark) stands in a self-referential relationship: there are no factual sides without a distinction which involves indicating one (‘marked’) side of that distinction against another, unknown (‘unmarked’) side. This is why Spencer Brown (1969, p. 4) tells us to: ‘call the form of the first distinction the form’.

Spencer Brown outlines two ‘primitive’ operational equations following two axioms. First, the ‘law of calling’ holds that ‘the value of a call (i.e., to name or mark a distinction) made again is the (same) value of the call’. This is akin to calling the same thing twice - but both things called are identical if they are not distinct (Neuman, 2003, p. 91). No matter how often we repeat this call, the named or marked value remains the same, so that applying the law of calling takes the form of *condensation* (i.e. the mark) as shown in figure 2:



Figure 2

The second law is the form of ‘crossing’, holding that ‘the value of a crossing made again is not the value of the crossing’. Figure 3 shows that values of both intentions (crossing and re-crossing) together is the value indicated by none of them and, thus, a *cancellation*. Here, the outer mark serves as an operator in the interpretation: Operating on itself, it cancels itself, crossing from the marked state means entering the unmarked state (Kauffmann & Varela, 1980, p. 174). Another way of putting this is to say that a distinction (i.e. a differentiation) cannot

¹¹ This is similar to Peirce’s sign of illation, indicating an inference, for example in made-up words in Lewis Carroll’s poems, such as ‘slithy’ (lithe and slimy) or, more recently, ‘smog’ (smoke and fog) (See Kauffmann, n.d.)

¹² Many other distinctions are possible, e.g. finite/infinite or is/is not. See Herbst (1971, p. 89).

itself be differentiated, as it is the most basic unit of analysis, for to do so ‘turns us back into the void... from distinctiveness to nothingness’ (Neuman, 2003, p. 92). Like the crossing of life into death operates on life, it cancels out what that life previously was.

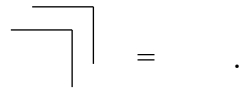


Figure 3

These two equations represent the foundational states of observation that either condensates the form by repeating it or cancels the form by re-crossing it. Throughout *Laws of Form*, Spencer Brown demonstrates how any combination of marks – no matter how complex – can be reduced to either the mark (Fig. 2) or the no-mark (Fig. 3).

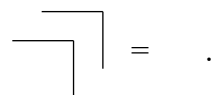
Equipped with these two simple injunctions, Spencer-Brown and his brother had developed a machine to count train wheels going backwards and forwards in and out of tunnels. Placed at each end of a tunnel, they counted each train’s wheels, and if the count did not match an alarm would go off, thereby, preventing anything from entering the tunnel (Spencer-Brown in Barney, 2019, p.18). Throughout *Laws of Form* Spencer-Brown demonstrates how complex combinations of marks – which probably surpasses any daily routine of trains – can be reduced to either a mark (Fig. 2) or the no-mark (Fig. 3). We may count a wheel entering:



Now it rolls forth and back on the counter, so the *same* wheel is counted (perhaps over and over) again:



But then it reverses out of the tunnel:



Next, the wheel rolls back into the tunnel again, and so forth, producing beautiful logical formations:

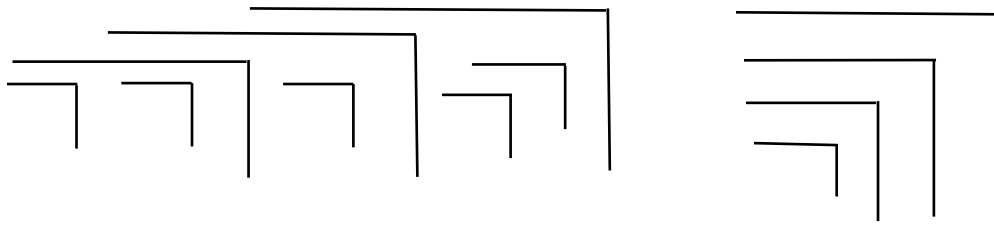


Figure 4

These can be reduced (by means of cancellation and condensation) to \neg (one wheel has entered) which can be compared to the same calculation on the other end of the tunnel (see Spencer-Brown, 1973, p.18).

However, it does not stop here. Spencer Brown also introduces us to the observer by allowing *Laws of Form* – the book itself – to question its own beginning (Spencer-Brown 1973, p.68). Like sets that cannot be members of themselves, this self-referentiality creates its own paradoxical form; a *re-entry* (dotted line in Fig. 5) in which the form (e.g. the book locating the origins of everything in distinctions) enters the form (as something that is itself a product of distinctions):

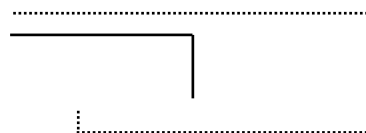


Figure 5

This means that re-entries entail blind spots as no observer (be it a book or a person) can see their own observation. Baecker (2015) shows an organizational application of Spencer Brown's concept of re-entry. Organizations not merely reproduce existing patterns and processes, but they continually engage in the evaluation, adjustment and alteration of what they are in relation to their environment. The task of management can be expressed as follows:

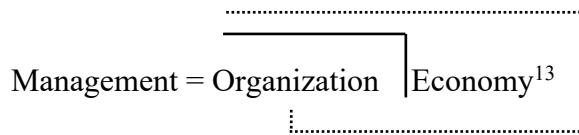


Figure 6

The solid line is a ‘mark of distinction’ (cf. Fig. 1), indicating managers’ role in distinguishing outside (economy) and inside (organization). When making decisions, managers may treat the outside (unmarked state) as stable or unchanging. Baecker calls this a ‘heroic’ mode, as managers rely on their character, authority or on rational tools to commit to a decision without ambiguity or dithering. Such a decision may be reiterated in numerous strategy documents, but these do not add new meaning to this decision (Fig. 2). Such decisions fix the boundary between organization/economy and all the heroic manager can do is wait and see how things go in relation to the (unobserved) environment.

A different, ‘post-heroic’ mode of managing would instead involve the continuous reconsideration of the ‘inside’ (the organization) in light of its relation to the outside (the economy). A post-heroic manager, perhaps not trusting what she¹⁴ sees, may speak to customers, study other industries, or read books, in order to reassess the organization-economy distinction. Indicated by Figure 3, the post-heroic manager may cancel or suspend any initial decision (taking time to look beyond the boundary of her organization) and draw a new distinction. But she can also start to reflect on her way of observing the organization and thereby ‘re-enter’ (Figure 6: dotted line) the organization. The paradoxical complexity of the post-heroic approach is easily veiled by the eloquent simplicity of Spencer Brown and Baecker’s depictions because, in order to make the world visible, the manager must do what is logically impossible: draw distinctions on the basis of the outcomes of these very distinctions.

Here, management entails a *self-referential* and reflexive position. It is worth noting that to observe a distinction is something very different from drawing it: gaining oversight means suspending action; while acting means suspending oversight. Post-heroic management requires continuous relating of both sides (what is marked and what is unmarked) as well as considering the distinction itself: observer and observed are merely partial reflections of each other; the organization is at once the input variable (as belonging to the environment, qua

¹³ Translated from Baecker (2015).

¹⁴ Men can also be managers and don’t mind being called ‘she’, do they? See Spencer Brown’s (2004, p. 112) use of gender-specific pronouns.

distinction) as well as an output one (as something about what a decision is made): A ‘re-entry of the difference between organization and economy into the organization’ (Baecker, 2015, p. 7).

Baecker’s analysis provides an expandable application of *Laws of Form* to different contexts such as local, national and global economies. A second order observer (a higher ranked manager) may look at how the (first order) manager draws distinctions, while herself being observed by a third-level observer, and so on. Precisely because the post-heroic mode requires the continual adjustment of responses in light of feedback received from any distinction, it lacks the commitment, clarity and unambiguity of the heroic mode; but in return this brings contingency and the emancipatory potential that as something is done, simultaneously, something else becomes possible.

The paradoxical conundrum of the post-heroic manager who, somehow, has to be both inside and outside of the organization, can be expressed as a mathematical equation (Spencer Brown, 1979, p. xiv): $x^2 = -1$ which, transposed, gives: $x = \frac{-1}{x}$. However, these equations are transposed, they always lead to a self-referential statement in which ‘x’ is determined by a calculation that already involves ‘x’ which, similar to the manager, ends up on both sides of the equation. It is precisely this self-referentiality Russell disallowed (see also Baecker, 2015a). But rather than treating this as a question of abstract logic, Spencer Brown (1969, p. 98), describes a series of infinite (‘subversive’) steps where ‘x’ *remains* on both sides of the equation. He invites us to simply insert the (self-referential) value of ‘x’ (which is $\frac{-1}{x}$) whenever we would encounter ‘x’ – thus following the recurring cycles into infinity:

$$x = \frac{-1}{(x) = \frac{-1}{(x) = \frac{-1}{(x) = \frac{-1}{(x) \dots}}}$$

Here, the unknown part simply ‘re-enters’ (is copied into) the equation, resembling not finite Russellian logic, but cycles of computer switches and railway carriages which can be subjected to Turing machine execution of operations that brush against infinity.

... in respect of its own information, the universe must expand to escape the telescopes through which we, who are it, are trying to capture it, which is us. The snake eats itself, the dog chases its tail (Spencer Brown, 1969, p. 106).

But just like Spencer Brown's 'solution' to " $x^2 = -1$ " represents endless cycles, the post-heroic manager finds herself in an endless regress; all of which can now be elegantly depicted in staggered marks of distinctions and re-entries (see Baecker, 2006 for a fuller example of organizations nested in environments). This is the same as suggesting that the post-heroic management problem is a potentially infinite line of oscillating responses: *now* organization, *now* environment, *now* organization, and so on.

Spencer Brown's imaginary process therefore introduces the element of time into logic (Wille, 2009, p. 175ff) or, rather, it *creates* time as soon as this oscillation of states is measured (Spencer Brown, 1973; 1969, p. 75). The question is suddenly no longer whether the right or wrong (heroic) decision is taken, but rather how managers can pursue these potentially infinite series, day in and day out, year after year. What may appear as a paradox when merely looked at statically loses its paradoxical quality thr

ough the addition of time (Bateson, 1991, p. 181; Kauffmann, 2016, p. 270) in which computational functions of infinite cycles can unfold.

All is Nothing: Re-entry II

While *Laws of Form* emphasizes the creative potential of drawing distinctions, it is not radically constructionist in suggesting observers can draw *any* distinction. The scope of possible distinctions depends upon another, more primordial context: a *medium*¹⁵ providing the conditions of possibility for all following forms. Even a rule, to be followed, requires the medium of a voice or a 'flat piece of paper' on which distinctions can be recorded:

The fact that men [sic.] have for centuries used a plane surface for writing means that, at this point in the text, both author and reader are ready to be conned into the assumption of a plane writing surface without question. But, like any other assumption, it is not unquestionable, and the fact that we can question it here means that we can question it elsewhere... Moreover, it is now evident that if a different surface is used, what is written on it, although identical in marking, may be not identical in meaning (Spencer Brown, 1979, p. 70).

¹⁵ While a medium gives always possibilities for more than just one single form to occur (e.g. the media of money and power giving rise to economy and politics, as in Parson's (1977) theory of generalized symbolic media), it still delimits the range of possible forms. Luhmann (1997: 198) media as loosely coupled elements, brought into a stricter coupling through forms; a specific form of selection within a medium, e.g. language as medium for words, or words as medium for a poem.

The paper on which the mathematician draws her first line provides the space that is severed or cloven; the medium from which certain forms can be selected (Bakken, 2014, p. 496). Spencer Brown shows us that a flat sheet of paper allows different forms than a torus; in the same way in the *media* of management, leadership, and organization each limiting the scope of possible distinctions (organization/economy; organization/society; operations/industry) (Heider, 1959/1926).

But the medium is not really where it all begins. At the very beginning of *Laws of Form* (itself already a medium), before we encounter injunctions, spaces or even mention of paper, we find a series of symbols from Lao-tse's *Daodejing* which translate into: *Wu* (nothing) *ming* (name) *tian* (heaven) *di* (earth) *zhi* (from) *shi* (beginning) (Wille 2009, p. 64). Earth and sky emerging out of nothing, or as in von Förster's (2014, p. 5) interpretation: 'the beginning of heaven and earth has no name.' In a similar way, the bible, *Genesis*, 1: 2 tells us that 'Now the earth was formless and empty' and even Hesiod's *Theogony*, spelling out the coming into being of cosmos, lets the muses sing that 'In truth, first of all Chasm came to be'; a gap or opening from which earth and sky, day and night, mortals and immortals emerge (Hesiod, 2006, p. 13). Exactly, in this point lies the radicality of Spencer Brown's claims: Only what is first distinguished *is*; and 'all this' – including infinity (see Spencer Brown, 1995, p. 128) - merely follows once it is distinguished against the nothing. In the introduction to the German translation of *Only Two*, Spencer Brown (1994, p. 11) remarks:

...the only »thing« (i.e. nothing) that would be sensitive enough to be influenced by a stimulus so weak that it didn't exist, was nothing itself. That is, nothing is the only »thing« that is so unstable that it can »go off« of its own accord, the only »thing« sensitive enough to be changed by nothing. So, if nothing could change nothing, we have, inevitably, the appearance of a first distinction, and the rest, including the ineluctable appearance of »all this«, inevitably follows.

Spencer Brown's poetry and stories convey the qualities of an originary, formless nothing out of which any first distinction and all forms can emerge. They are based on his broad engagement beyond mathematics, with (especially Eastern) philosophy, psychoanalysis and art. To trace these wider ideas, and to prepare us for an interpretation of his poetry and stories, we turn to the elaboration of the nothing in these areas, beginning with what the Japanese philosopher Keiji Nishitani calls 'selfness':

... a self that emerges into its nature where each and every thing is in itself and at its own ground (whereby fire is fire because it does not burn itself, the willow is green because it is not green, and time is time because it is not time) and is at one ... with all of them (Nishitani, 1982, p. 257).

Fire cannot burn fire; having to reach out of its self-enclosure into the surrounding field and so become fire only in its encounter with combustible and other elements: with all things not itself. And so all objects can only be constituted in the negative, against their 'universal remainder', through the difference between themselves and their surrounding field (Bryson, 1988, p. 98). This universal remainder is a point of 'absolute nonobjectifiability' (Nishitani, 1982, p. 188) prior to all reason and logos; *before any medium*, even before time or space, has to be a differentiation that brings them into being (Spencer Brown, 1973). Nishitani, says:

Take the tiny flower blooming away out in my garden. It grew from a single seed and will one day return to the earth, never again to return so long as this world exists. Yet we do not know where its pretty little face appeared from nor where it will disappear to. Behind it lies absolute nihility: the same nihility that lies behind us, the same nihility that lies in the space between flowers and men. Separated from me by the abyss of that nihility, the flower in my garden is an unknown entity (Nishitani, 1982, p. 101).

Never a thing in its own right, the flower exists as trans-formation from seed to blossom to dust as an 'inclusive generic space'; without ever appearing in itself. Always on the move, any pre-sence merely indicates immanent yet ungraspable absence brimming with potential, yet forever beyond, and yet within, all the forms and objects that make up our visible, positive world (Cooper, 2006, p. 63). And just like the flower, the human body 'is not a thing or substance, given, but a continuous creation' (Brown, 1966, p. 155) of form out of raw matter (Cooper, 2009, p. 243). This *nothingness*, this formless mess, is always here, even though it can never be observed. The flower is already dust; human existence already non-existence; any form (*this* blooming flower *on* that field; *that* human being, *there*, smiling) is always only one of the 'multiple presences that constitute the being of everyday life': one form (a *trans-form*) appearing qua the ongoing human act of creation, out of here-yet-absent void (Cooper, 2006, p. 61). The blooming flower calls forth the seed from whence it emerged and the dust into which it will inevitably turn, and so the flower is never fully present or absent, but 'forever suspended between the two' (Cooper, 2006, p. 66). Birth

... throws the human body into an invisibility of unmarked space [where] the body ... founds and finds itself through a primal act of division which engenders the self as a collection of organs – eyes, hands, brain, nerves, etc. – that actively work on the physical matter of the world (Cooper, 2006, p. 64).

This primal division is a cut, an act of violence or accident, opening up an agonistic field that throws human existence into a ‘continuous process of founding and finding, re-founding and re-finding oneself in a world motivated by incompleteness, decay and disappearance’ (Cooper, 2006, p. 61). Human organization is the ‘relentless praxis of process in pursuit of itself’, beginning in indefinition and lacking perceptual clarity, striving to create a meaningful world of forms out of this structural absence (Cooper, 2007, p. 1547).

Here we find a different kind of re-entry: Not dependent on observers or endless oscillation, Spencer Brown’s poetry and stories point towards a unity behind any medium. Just like actual keys lose their singularity the moment they enter and dissolve into *their* locking mechanism, the well-chosen nom de plume ‘Keys’ (sexual motifs aside) signifies its difference and simultaneous belonging of something and nothing. As cultural techniques, keys also open doors that separate one system from another, unlocking *Laws of Form* through *Only Two’s* poetry and psychoanalytical tangles. Spencer Brown (1971, p. 110) sees *Laws of Form* and *Only Two*, ‘in some respects [as] companion volumes.’ He later adds his (supposed) children’s book ‘*A Lion’s Teeth*’ (Spencer Brown, 1995, p. 22), referring to his ‘Trilogy’. Speaking as Keys (1971, p. 83), he remarks:

There is a game children play with the tide is coming in, surrounding themselves with an ‘impenetrable’ wall of sand, keeping the water out as long as possible ... Adults play a similar game, surrounding themselves with an ‘impenetrable’ wall of arguments to keep out reality.

The reality is that all is nothing; and precisely this insight must be locked out by means of logic and argument. But, like water, reality breaks in, ‘flooding us out’ when we have overdrawing our boundaries. Keys (1971, p. 89) rants about expert, professions, personalities, identities, and specialists, especially the ‘qualified people’ who ‘sneer, sneer, sneer, cut, cut, cut everyone else down to their size’, a cutting and dividing that ends in the ‘final indignity’ of giving the part precedence over the whole. A whole that increasingly covered up under thicker and thicker layers of language, theory, doctrine, fashions, ideals, politics, religion,

respectability, decency and humanity' by identities that 'cripple' people 'so that they will be incapable of doing anything else (Keys, 1971, p. 95; 120).¹⁶

All is and is not Nothing

That all comes from (*is*) nothing – and therefore always stands in relation to (*is distinguished from*) nothing brings us back to the paradox of *Only Two can Play this Game*¹⁷: How can two individuals stay together for extended times, sometimes their entire adult lives, as a unit? What, in other words, is the *medium* of human life so it unfolds as a play of unity and difference? Following Spencer Brown into psychoanalysis will provide us with further clues as to the qualities of such a unity. Carl Gustav Jung's (1916) *Seven Sermons of Death* state:

Hear Ye: I begin with nothing. Nothing is the same as fullness. In the endless state fullness is the same as emptiness. The Nothing is both empty and full. One may just as well state some other thing about the Nothing, namely that it is white or that it is black or that it exists or that it exists not. That which is endless and eternal has no qualities, because it has all qualities.

Jung names this endless and external domain *Pleroma*; a world without distinctions that can neither be grasped or even thought about. Opposed to the *Pleroma* stands the *Creatura*, the world of living things; a world, *inter alia*, for human beings. We live because our "...essence is differentiation ... [of] individual qualities ... we die to the extent that we fail to discriminate. The differentiations arising from the *Pleroma* come in pairs: all and nothing, the effective and ineffective, the living and the dead, light and dark, hot and cold, good and evil. The *Pleroma* holds both sides of distinctions and because they continually cancel each other out, the *Pleroma* is indeed all *and* nothing.

The *Creatura*, the world of living things, is essentially removed from the *Pleroma*. As mortals, we are bounded in time and space, while such properties, as any bounded characteristics, are alien to the *Pleroma*. In the *Creatura*, that is in us, these distinctions are differentiated: We see light *or* dark, we embrace the living *or* we demure before death, we are hot *or* cold, we applaud the good *or* condemn evil. In us there is no cancelling out. In holding

¹⁶ For similar notes on scientists see Spencer Brown, 2004: 33,39,110,112.

¹⁷ The book elaborates the marriage of man and woman (an institution the author says he does not much believe in), but its insights can be extended to include same-sex relationships. This itself is perhaps its most profound insight: that things could be otherwise and that any distinction, especially those so taken for granted, were once drawn; they required an act, and so they can be redrawn as well (see also Luhmann, 1988).

these distinctions open, we live. Being alive means drawing and seeing distinctions. Life is a tension or span; an open wound afflicted by the accident of birth, pulsating, seeping, festering and seeking closure in the healing that is death; that is when the *Creatura* with all its distinctions, dissolves once again in the eternity of indifference that is the *Pleroma*. The accident of life is therefore that we perceive the world only ever as one end of these distinctions: all, effective, living, light, hot or good. Nothing, ineffective, dead, dark, cold or evil:

When we strive for the good and the beautiful, we thereby forget about our essential being, which is differentiation, and we are victimized by the qualities of the *Pleroma* which are the pairs of opposites. We strive to attain to the good and the beautiful, but at the same time we also attain to the evil and the ugly, because in the *Pleroma* these are identical with the good and the beautiful (Jung, 1916, p. 47).

The *Pleroma*, whilst inaccessible to the *Creatura*, still holds its cancelling-out sway over us. To be born is to begin the process of dying in the same pattern in which the heat of spring already beckons the cold of winter; the good deed stands out against a background of evil and apathy; and the way in which the infusion of energy into a part of any closed system begins a process of exchange towards entropic equality (Bateson, 1972, p. 463). The differences and distinctions that animate the world of living things are therefore always temporal and fleeting; only holding up in the struggle for life until, eventually and inevitably, life exhausts; and with the last breath of the living-dying being all distinctions, all striving and willing, and all possible paradoxes which span between those poles, again come to rest in their natural, cancelled out state. Such is the infinity of the *Pleroma*: a state in which all distinctions are cancelled out.

I tell you: one must have chaos in one...

Jung held seminars on Nietzsche in 1934, followed by more intense readings throughout the isolated years of the war. In 1872, Nietzsche had published his first work, *The Birth of Tragedy*, breaking with the tedium of philology to produce a philosophical treatise in a new style of writing, questioning and expressive of emotions and drives rather than analytically demure: Why we are so incapable of joy in the face of the fleeting, the transitory, the fugitive and mortal? Is not the very mutable perishability of human life is to be commended? In the introduction, Nietzsche tells us that it is:

... the continuous evolution of art is bound up with the duality of the Apolline and the Dionysiac in much the same way as reproduction depends on there being two sexes which co-exist in a state of perpetual conflict interrupted only occasionally by periods of reconciliation (Nietzsche, 1872, p. 14).

Apollo, god of image-making sculptors, of dream and light, pleasure and beauty, and Dionysus, patron of imageless music, intoxication, song and dance, form a reciprocal bi-polar necessity: Sublime Apolline beauty set against the ground from which it gains its levity. The sculpture carves the individuating boundaries, the images that make the self, so that it can first know it-self, against a drunken world of contour-free boundary-crossing that destroys the barriers and limits of existence; a world of excess and getting above oneself; and of imageless, primal pain (Girard, 1972, p. 125). Ancient vases depict these in-between qualities, showing Dionysus's followers with half-human, half-animal bodies; Dionysus himself, originally a fertility god in form of a bull or goat, is drawn in a soft and feminine human shape (Nussbaum & Sihvola, 2002, p. 18).

Feminine-masculine, titanic-barbaric, shepherd-satyr: oppositions opening up a cleft into which art and human existence are born. The Dionysian is a terrifying world without meaning from which the Apollonian form offers aesthetic salvation through form, beauty, and visual imagery (Nussbaum & Shivola, 2002, p. 18). Neither art nor life flourishes in either domain alone: the Dionysian too terrifying, the Apollonian too unnourishing, too aloof to maintain connection with the world. The Apollonian restrains but never eliminates the exuberance of the Dionysian, releasing joy *and* terror; fear *and* hope; order *and* chaos – and so Nietzsche's (1885, p. 9) Zarathustra speaks: "one must have chaos in one, to give birth to a dancing star".

Having chaos in you means leaving the middle to embrace both the sublime and the terrifying, and to do so without flinching or wavering. This is the birth of true art, which began with the invention of the Greek epic as a move from successive shifts between Apollonian tragedies and the debaucheries of the orgiastic festival towards integration. The epic foists these oppositions upon audiences caught in the curious paradox of being joyful spectators to the horrors unfolding before them on stage, seeing: "the tragic hero before [them], in epic clearness and beauty, and nevertheless [rejoicing] in his annihilation" (Nietzsche, 1999, p. 22). Nietzsche was enraptured by the composer Richard Wagner's *Gesamtkunstwerk*, beguiled by its capacity to shake 'mankind to its deepest foundations':

...music speaks from the depths of this heart; countless appearances like this could pass before the same music, yet they would never exhaust its essence, but would for ever remain mere externalized copies of it (Nietzsche, 1999, p. 103)

In Wagner's operas, the form of the actor, that Apollonian individuation, remains mere appearance; an 'isolated, shadowy image'; a soothing balm set against the archaic, primal, cruel barbarous and bestial (Eagleton, 2003, p. 53). *Tristan und Isolde* lets the audience 'see before [them], in sensuously visible form ... the undulations of the Will, the conflict of motives, the swelling current of passions, and as if they could dive down into the most delicate secrets of unconscious stirrings' (Nietzsche, 1872, p. 104). This stirring is not the same as the artistic effect produced by the sculptor, and the 'will-less' clarity and beauty of the tragic hero, but the destruction of that form, so that through that form, in the moment of its destructive negation, its sinking, the Dionysian wisdom is given voice. Nietzsche (1872, p. 105) quotes Isolde's final lines in 'Liebestod' (love-death):

To drown us – sink down thus –
all thought gone – delight alone

Nietzsche's original insight is this radical reversal: That the joy the tragedy stirs in the audience is not merely some ennobling, cathartic, or masochistic response (Price, 1998, p. 388), but when Dionysian drive 'consumes the entire world of appearances,' we can sense 'behind that world and through its destruction, a supreme, artistic, primal joy in the womb of Primordial Unity' (Nietzsche, 1872, p. 105). No longer a source of grief alone, the tragedy of the music drama brings this realm into a shimmering presence: "Dionysian impulse discharging itself in Apollonian imagery" (Eagleton, 2003, p. 56).

Jung's *Sermons* are set against this primordial unity. The images of the *Creatura* and their negation in the shadows of the *Pleroma* let an ungraspable, imageless and distinction-less world flicker and so announces our unity with nature; the reunification of spirit and body; joy and sorrow; what is good with what is most terrible; creation with destruction. This is the source of life, personality, vigour, will: the 'spark of opposites' creating life and determining being in the conscious *and* unconscious (Huskinson, 2004, p. 35; 95):

The Pleroma possesses all: differentiation and non-differentiation. Differentiation is creation. The created world is indeed differentiated. Differentiation is the essence of the created world and for this

reason the created also causes further differentiation. That is why man himself is a divider, inasmuch as his essence is also differentiation (Jung, 1982/1916, p. 46).

Re-entry into Organization Studies

James Keys, with whom we began, names birth the ‘serious accident’. Natality invokes mortality; “[l]ife and death [are] equated: every coitus [repeats] the fall; brings death, birth, into the world” (Brown, 1966, p. 48). In addition to its sheer accidental contingency, birth carries the tragic inevitability of death in the same paradoxical way in which the unity of a relationship carries the spectre of loneliness, requiring neither fate, reason, justice, providence, the gods nor any other, external point. The accident is already there and even the most stable and peaceful period in life is merely a transition; what something *is*, is merely a veil for its true being: its mortality and decay: all that *is*, is indeed nothing. The Dionysian intuition, that ‘cauldron of seething excitement’, is the psychoanalytical *id* standing against an essentially passive *ego* (Brown, 1966, p. 88); the individual or society made up of forces that are disruptive, destructive, and uncivil (Eagleton, 2003, p. 144).

Spencer Brown (1995, p. 36) tells the story of ‘A Little Spider’ spinning her morning web in an arch between trees. With a blow of the wind, she throws her first horizontal thread then, ‘moving in and out from the frame to the centre of the web and back again ... joining them all together with a fine spiral thread’. But as soon as she has finished, the protruding fishing rods carried by two boys along the forest path snap the web, leaving her ‘in ruins.’ The spider restarts her labour, finishing just before dusk, just when the boys return from fishing, again snapping her construction. The next morning the spider rebuilds her web, only for the previous day’s events to recur, leaving her fatigued and starving. On day three, the spider despairs, ‘for she knew now that these terrible punishments were coming to her because of some dreadful fault in her character... vowing to be a better spider in the future.’ In exhausted, feverish frenzy, she completes the finest and most elegant web, shining like silver in the sun, making her envious spider friends proclaim:

My, my! I’d give my life to be able to spin a web like that!
But the little spider wasn’t listening. She was dead.

The fable’s endless symbolism (Spencer Brown, 1995, p. 80) readily speaks to the problems of management: The spider’s predicament arises out of her awe-inspiring ‘heroic’ (Baecker, 2015) character, assuming a causality of events leading to the three-fold destruction

of the net that places *her* at the centre of ‘these terrible punishments’. This ‘sanity of identity’ (March, 2013, p. 206) ascribes to the spider the all too human need to comprehend the world by being ‘able to calculate it [through] constant causes; [and] because we find no such constant causes in actuality, we invent them for ourselves’ (Nietzsche, 1967, p. 334). The invention of causes is akin to erecting the impenetrable wall that keeps out reality, for reality is the infinite, invisible and mute ground of mutability, which is intrinsically unlocatable. Nietzsche’s ‘causes’ and Keys’s ‘sandy walls’ indicate this violent *catachresis*, the perversion of applying tokens and expressions to a ‘substratum’ that it does not properly denote: the severance of the undivided wholeness of the world; a ‘participial act’ of the world cutting itself into two in order to see itself as part and whole (Spencer Brown, 1971, p. 105; Cooper, 2013 604).

In mistaking the part for the whole, we find not understanding but rather self-blaming, exhaustion, excessive efforts and the spider’s ultimate death. Her wisdom extends to weaving patterns from nothing, picking suitable trees and exploiting favourable gusts of wind, but not to the paths of humans and weekly rhythms which sees the two boys return to school, instead of going fishing, on the third day. These wider patterns can only become apparent through Spencer Brown’s voice as a distanced narrator who can distinguish human paths from forests, weekdays from weekends, educational and recreational practices, and much beyond. And only a (second order) reader of Spencer Brown’s stories can judge the author to be a strong mathematician or a poor poet, invoking distinctions of scholarly excellence and writerly traditions, and much beyond; all in the tradition of the ‘expert’ whom Spencer Brown (as Keys) so virulently detests.

Re-entry II: Participation in the Nothing of It All

Yet, there is more. In their reflections on paradox, Schad et al., (2016, p. 36) invoke the ‘unity of opposites’, where things cannot exist without their counterparts, meaning paradoxes must equally exist as *unified wholes*. Baecker’s (2015) reading of Spencer Brown apprehends a unity of opposites through oscillating re-entries.

But Spencer Brown’s fable does not end here; it ends with the spider’s death following exhaustion, and thus with the relationship between organizing, suffering and mortality. It ends with the ultimate emptiness (Nishitani, 1982) that forms a constitutive negativity, a *unified whole* which, as death, remains intrinsically unlocatable. Rather than moving outwards, from observer to observer, this movement goes inwards; far deeper than the elegant expressions of *Laws of Form*, towards the fleeting, transitory, fugitive and mortal; towards the ‘primordial

unity' (Nietzsche, 1872, p. 105) where even death, 'as death', vanishes into a wholeness which is 'more than sense (tho' ever so acute) can discover' (Blake, 2007, p. 57).

Here we see why Spencer Brown turns from logic to poetry and stories – because the deepest space is not yet reached by the greatest number of inwards crossings of complex nets of distinctions (Spencer Brown 1973, p.40). Becoming audience to the spider's plight, we are not merely distant observers, but part of the tragic spectacle in the sense of *theoria*, of being 'totally involved in and carried away by what one sees' (Gadamer, 1975, p. 127). 'The paradox unique to art', Luhmann (2000, p. 149; 141) argues, 'resides in the observability of the unobservable' by 'integrating what is in principle incommunicable'. And in so being carried away by poetry, stories or tragedies, the 'mute field of mutability' (Cooper, 2013, p. 588), begins to speak to us not in the language of causes and objects, but wholeness, by 'giving oneself in self-forgetfulness to what one is watching' (Gadamer, 1975, p. 128). Just like fire has to reach out of its self-enclosure, the spider reaches out into the surrounding field, and we marvel at the 'graceful' (Bateson, 1972, p. 108) participative extension of the spider's deferred relationship between intestinal organization and a web that catches and stores its food.

Against the zero-ground of the unified whole all things are constituted in partial relations. Just as fire reaches out into its other, organization carves order, forms and meanings disorder (Cooper, 2013, p. 599); while economy reaches out to contain the violence of its environment with its disembodied and seemingly neutral functions of industry, commerce and markets, forming a bulwark against the arbitrary and naked mob violence of the riot and 'panic' of a Hobbesian 'war of all against all'. But in containing the contagion of violent passions within the belief in the invisible mechanisms bestowing equilibrium and optimality, economy also comes to 'contain', that is include another, banal form of institutionalised violence that corrupts our moral sentiments by justifying suffering in the name of an abstract and invisible logic of the market (Dupuy, 2014, p. 30, c.f. Bateson, 1972, p. 489).

Not by accident are the production lines of automated manufacture rooted in the the abattoir. Distinguished merely in the direction of flow, one assembles, the other disassembles bodies (Burrell, 1997, p. 144). This paradox can only be grasped when setting the very distinction between organization and its environment, or the spider-web complex and the trees, forest paths and human practices, the organization *and* its other, against the pleromatic ground, indicated by the nothing in which all distinctions disappear. Our sympathy in the unfolding tragedy of the spider's labouring on her shiny web moves us beyond causalities by appreciating participation itself as the 'highest manner of being human' (Gadamer, 1975, p. 470). In sympathy, we glimpse the fable's paradox of the double role of organizing in ensuring survival

whilst invoking suffering, the tragic expression of the torments, pity and fear that accompany the passages from birth to self to death (Jung, 1916, p. 57). In sympathy, we may begin to draw peripheral connections, for instance how the fabrication of ‘shiny’ consumer goods brings regular wages and reliable commerce while forcing slave-workers and child-labourers to weave *their* threads in clothing factories, joining the countless other victims of organized exploitation, including animals and the natural environment. Understanding wholeness not merely as the unity between two opposites, but as the zero-ground against which anything that ‘is’ spans paradoxical relations: Life to death; economy to violence; organization to disorganization: ‘... to be at one with all nature’ (Spencer-Brown, 2004, p.100).

The location of the unified whole in the nothing also beckons the possibility of the absence of these couplets and paradoxes. The reckonings of generational inequalities, algorithmic simulations of realities or the progression of the effects of climate change are issues that not merely require re-entries into extant distinctions but the reimagination of human life in their absence: be that as shrivelled existences reduced to bare biological life, when states of exception become permanent, or when there is no memory of distinctions that can be re-entered. We can already glimpse such possibilities in outbreaks, such as the current COVID19, which are so severe they threaten the very existence of our communities (Girard, 1972, p. 134). Here, the very ground, the medium from which distinctions can be cleaved is at stake because the organization of global commerce, travel and world-wide logistics also create the perfect conditions for viral contagion, together with the plastics and metals on whose surfaces droplets can survive, or factories so loud, workers have to shout into each other’s faces. But also our social gathering, touching, and kissing, our eating and drinking, in short all the conventions that make us modern social beings, also invite the virus to leap from animals to humans, to be preserved by movements of goods and people faster than liquid can dry, and so befall populations made overweight and ill through the outsourcing of physical activity to machines and calorific excesses of processed foods. The human condition has turned, to borrow Serres’s (1982) term, from parasites to being hosts to a virus that feeds off the very things that make us who we are. The fragility of our condition is no longer merely a matter of organized work set against economic turmoil; school calendars against vacations; or healthcare set against ageing populations, but the very existential questions of whether we can still be at home in our world when we are isolated, fearful and alone. To which extent are we alive when we are hooked up to medical apparatuses? Are there differences in the suffering or in death, say between those infected with the virus and those from poverty and economic hardship as a result of lockdowns; or those driven to suicide for lack of support or human contact; or those whose medical

treatments for other conditions have been suspended? And is it still possible to love when every other is a potential source of infection or a competitor in the global race to vaccine dominance?

Where all distinctions blur, we need to be much more cautious about the all too lofty, clear and heroic elements of research; those that cast the ‘world as re-presentation, as semblance; cast, like a Greek hymn, a ‘pure, unclouded sun-eye’” (Nietzsche, 1872, p. 36). To all this, the question of paradoxes is central, as it not just points at the juxtaposition of incommensurable dimensions, but also to the very act of the identification of any difference in the first place. This is the accident of which Keys speaks, and it is the purpose of mathematics, psychoanalysis, poetry *and* stories to indicate the unity not just of either side of a distinction, but of the very distinction with indistinctive totality, as such.

Spencer Brown’s contribution to organizational paradoxes thus lies in his way of going deep *into* the paradox; behind the form and its distinctions, behind the medium, and into nothingness. Showing how everything is created out of nothing urges us to accept and live with this (ever present) absence. This does not mean that we should simply get lost in indifference or withdraw from the world but recognize the vast and radical possibilities of actively and creatively producing distinctions set against the nothing (Frambach, 2003, p. 119). As Keys (1971, p. 14) tells us: ‘There really is nothing to prevent us from rewriting the stage-directions’ and so why do we, as students of organization, do so little of this? Keys’s antagonism towards experts, identities, and professions, borne out of the limitedness of Apollonian forms, seems to also pertain to our efforts. Eagleton scathingly puts it thus:

As we witness the detestable emergence for ‘theoretical man’, the exultant aesthetic spectator yields ground to the joyless academic eunuch, with his pathetic illusion that thought can penetrate and even correct Being (Eagleton, 2003, p. 18).

There is very little tragedy, or suffering, or love in organizational research; neither do we find drunkenness, humour or eroticism. For us, these become mere externalities, things to be studied. Yet those are the means by which one of the foremost logicians and mathematicians seeks understanding and through the trilogy of it all, Spencer Brown shows us their analytical value:

Only two
Can play
This game
One can

Play it
Just the same
None
Can play it
Otherwise
Minus one's
The one
That dies

(Keys, 1971, p. 69)

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